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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,870	09/22/2003	Francesco Coppola	TI-34641	1168

23494 7590 01/31/2006

TEXAS INSTRUMENTS INCORPORATED  
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EXAMINER
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CHANG, JOSEPH

ART UNIT	PAPER NUMBER
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2817

DATE MAILED: 01/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

**Office Action Summary**

Application No.

10/667,870

Applicant(s)

COPPOLA ET AL.

Examiner

Joseph Chang

Art Unit

2817

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/22/03 with correction of 6/10/05 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. in view of Jansson.

Regarding claims 1 and 7, Nelson et al. disclose in Figure 3 and paragraphs [0021]-[0024] a method of calibrating a voltage controlled oscillator (24) for generating a first clock signal (VCO output) comprising the steps of: determining an initial control word to configure the bank (VCO operating curves) using a search in which the voltage controlled oscillator is operated at a single predetermined control voltage (Vref) for various capacitive settings of the bank (Para.[0024]); testing the initial control word to

determine whether the frequency range produced by the initial control word should be used to generate the first clock signal at the new desired frequency or whether the initial control word should be changed to an adjacent control word (Para.[0024]). However, Nelson et al. does not explicitly disclose that the VCO is a digitally controlled LC VCO with a bank of capacitors as recited in the claim. As would have been well known in the art, as shown in Jansson, such LC VCO with digitally controlled bank of capacitors is used in a PLL for tuning desired oscillation frequency digitally so that it can provide self calibration as taught by Jansson.

Accordingly, It would have been obvious to one of ordinary skill in the art at the time of the invention to use such LC VCO with digitally controlled bank of capacitors as taught by Jansson in place of the generic VCO of Nelson et al. because such modification would have been considered a mere substitution of art-recognized equivalent VCO for tuning desired oscillation frequency digitally.

Regarding claim 1, as noted above, Nelson et al. and Jansson show a tuning circuit (300) comprising a VCO (24), a frequency divider (38), frequency control circuitry (34), logic circuitry (32). It is noted that functional limitations recited in the claim inherently present in the modified circuitry above because of intrinsic functionality of phase locked loop circuits used in communication system.

Regarding claims 2 and 8, Nelson et al. discloses the logic circuitry (state machine 32) determines an initial control word (L, Para.[0028]) to configure the bank by using a search ("identify the two VCO operating curves ..." Para.[0024]) having an

accuracy that is  $\pm 1$  LSB ("just above and just below ..." Para.[0024]) of the initial control word (center frequency control signal L).

Regarding claims 3 and 9, Nelson et al. discloses the logic circuitry (state machine 32) tests an initial control word (L, Para.[0018]) by comparing the desired frequency to upper (max) and lower (min) bounds of a frequency range for the voltage controlled oscillator while configured according to the initial control word (L, Para [0018]).

Regarding claim 4 and 10, Nelson et al. discloses fast comparisons take place when SW2 is closed and more precise comparisons take place when SW1 is closed. (Para.[0022]).

Regarding claim 5 and 11, Nelson et al. discloses testing the initial control word (L) within a predetermined threshold (Max and Min, Para[0018]).

Regarding claim 6 and 12, Figure 3 of Nelson et al. shows divider 38 dividing signal from the VCO 24, and actual frequency (V) that is output of 38.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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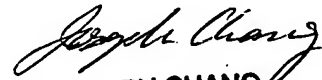
§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Chang whose telephone number is 571 272-1759. The examiner can normally be reached on Mon-Fri 0700-1730.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
JOSEPH CHANG  
PRIMARY EXAMINER